Illinois Department of Natural Resources

State of Illinois

State Wildlife Grant (SWG 2005) - Grant Proposal

Project Title: Critical habitat for Massasauga.

Project Number: T-23-P

Purpose:

The purpose of this project is to expand the range of the Eastern Massasauga Rattlesnake and other grassland species at South Shore State Park and Eldon Hazlet State Park on Carlyle Lake by: 1) Managing and enhancing existing known massasauga habitat; and 2) restoring 200 acres of successional growth, dominated by autumn olive and other exotics, which is adjacent to known massasauga habitat into grasslands. The increase of habitat will expand the range of the massasauga, a state-endangered species, as well as other grassland species. Carlyle Lake is the last stronghold of this critically imperiled species.

Both state parks are leased by the Illinois Department of Natural Resources from the U.S. Army Corps of Engineers, which built the 26,000 acre lake.

Need:

The Eastern Massasauga Rattlesnake (Sistrurus c. catenatus)was added to the Illinois Endangered Species List as endangered in 1994. The U.S. Fish and Wildlife Service elevated the snake to candidate status on the Federal list in October of 1999. The massasauga is also listed as "a Species in Greatest Need of Conservation" in the Illinois Comprehensive Wildlife Conservation Plan and Strategy. The principle cause of the decline of the snake is ongoing modification and destruction of suitable habitat. A study funded by the Wildlife Preservation Fund suggested the current distribution of the massasauga includes no more than 8 Illinois counties. Newer findings suggest the Carlyle Lake population is the only potentially viable population of massasaugas in Illinois and the last stronghold for the species in the state (Eastern Massasauga Management Plan, Carlyle Lake, Illinois, 2001). The species is present at both IDNR state parks on Carlyle Lake, Eldon Hazlet and South Shore.

Massasaugas are intolerant of closed canopy forests because of the need of direct sunlight for thermoregulation. They require a mixture of grassy areas with scattered woody structure, either shrubs or small trees.

Much of the known massasauga habitat identified in both parks is becoming increasingly isolated due to the invasion of successional growth into the adjacent areas. These adjacent areas are dominated by autumn olive (Elaeagnus umbellata), a non-native exotic shrub and other exotics. Once established, these exotics are highly invasive, difficult to control and make up 60-80% percent of the tree canopy in these areas. It is low quality habitat for the massasauga as the leaf canopy blocks out the growth of low-lying grassy vegetation. Therefore, the snakes are not able to expand their range.

If this grant is approved, existing known massasauga habitat in both parks will be managed and enhanced. In addition, 200 acres of successional growth located next to the known massasauga habitat would be converted to grasslands. The grasslands would benefit all upland species and expand the habitat for the massasauga.
The Illinois Endangered Species Act gives IDNR a mandate to actively plan and implement a program for the

conservation of T and E species. The protection and enhancement of habitat for the massasauga at both state parks is consistent with this mandate.

At Carlyle Lake, a mark/recapture project and a telemetry study of the snake have been conducted by the Illinois Natural History Survey to learn more about their habitat requirements. Based upon these studies, areas with populations of massasaugas have been identified.

Objectives

The objective of this proposal consists of: 1) Management and enhancement of existing known massasauga habitat and: 2) increasing grassland habitat by approximately 200 acres to expand the range of the snake and other grassland species.

The management and enhancement of existing habitat will be accomplished by controlling successional growth and encouraging native grass and forb production. A combination of management methods will be used consisting of: prescribed burning and spot mowing; hand-clearing of undesirable trees and exotics species; and thin-line basal bark treatment of undesirable trees and exotic species with triclopyr herbicides.

Increasing grassland habitat will be accomplished by converting an estimated 200 acres of successional growth, currently dominated by 60 - 80% autumn olive (an invasive, exotic species) into grassland habitat. These areas are considered low-quality habitat for the massasauga and other grassland species because of the lack of low-lying vegetative cover.

The areas targeted for conversion are adjacent to known massasauga habitat which will help to expand the snake's population. Thus, the accomplishments of this proposal will greatly benefit the massasauga, an Illinois endangered species and "Species in Greatest Need of Conservation", as well as other grassland species such as loggerhead shrike, grassland sparrows, ornate box-turtle, barn owl, and dickcissel.

This project is consistent with the objective of the "Eastern Massasauga Management Plan, Carlyle Lake, Illinois". The plan states: the objective of this management plan is to locate, protect, enhance and where appropriate, expand habitat suitable for hibernation, seasonal movements, foraging and reproduction of the Eastern Massasauga (Sistrurus c. catenatus) on Federal and State land at Carlyle Lake.

This project is also consistent with the goals of the Illinois Comprehensive Wildlife Conservation Plan and Strategy for "Species in Greatest Need of Conservation - Grassland Habitats" where habitat objectives include "creating/restoring an additional 1 million acres of grassland within the Grand Prairie, Southern Till Plain, and Northeastern Morainal Natural Divisions". Carlyle Lake area is within the Southern Till Plain Natural Division.

In addition, controlling successional growth and exotic species in massasauga areas is listed as one of the Natural Resource Projects assigned to both site's "Annual Plan of Work".

Expected Results or Benefits

This project will benefit Carlyle Lake non-game wildlife species, such as the state-endangered massasauga and other grassland species. Carlyle Lake is the last stronghold for the massasauga in the state, and possibly the entire Mid-west. This project will maintain and enhance existing massasauga habitat ensuring suitable habitat will always exist in both state parks.
In addition, this project will increase, by approximately 200 acres, high quality habitat for the snake.
Anticipated products of this project is a larger population of massasaugas as well as increased populations of all Carlyle Lake grassland species.

Another benefit of this project is the eradication of 200 acres of autumn olive shrubs, a highly invasive, exotic plant. Currently, this species is encroaching into known massasauga habitat. One individual plant can produce 8 pounds of seed which is spread by birds and mammals. If left uncontrolled, known massasauga habitat will succumb to successional growth dominated by this exotic shrub. This project will eliminate the autumn olive seed source that threatens known massasauga habitat.

This project will be the largest habitat restoration project for the massasauga conducted in Illinois. The emphasis of the SWG is the protection and management of non-game species. This project will directly benefit non-game species by protecting existing habitat and by creating new habitat.

This project will also benefit huntable species, such as quail (an Illinois species of conservation concern) and pheasant. Eldon Hazlet hosts a controlled pheasant hunting program, November through January, which generates over $60,000 in permits sales annually for the general revenue fund. The maintenance of current grassland habitat and creation of new grassland will ensure hunters are provided a quality upland hunting experience. (Though The Illinois Comprehensive Wildlife Plan focuses on non-game species, IDNR has chosen to include huntable species in the plan as well).

Approach:

Maintain and enhance existing massasauga habitat at both state parks by: Performing controlled burns to impede successional growth and stimulate the growth of native plants, hand-clearing exotics and undesirable plants, and thin-line basal treatment with triclopyr herbicides of exotics and undesirable plants (i.e. autumn olive). This objective will be performed by park staff annually over the life of the project (4 years).

Restore an estimated 200 acres of successional growth dominated by autumn olive into grassland habitat by:

Task 1) Hire a contractor with brush/ tree cutting equipment to clear successional growth areas. Contractor will cut shrubs/trees to ground level. Any trees/shrubs deemed desirable for grassland habitat will be saved. This method has been used on public land with great success (i.e. Washington County Cons. Area and Shelbyville Lake USACOE). This task will be performed in the winter months when the ground is frozen.

Task 2) Cut autumn olive stumps will resprout vigorously and must be eradicated prior to restoration of the areas. To accomplish this task, park staff will mow areas after resprouting has occurred. Once mowing is accomplished, park staff will herbicide spray areas to kill the cut, but still alive, saplings. Task 2 will be performed in spring/summer months.

Task 3) Park staff will prepare soil for prairie grass seeding. Task 3 will consist of a combination of discing, mowing, and herbicide spraying to prepare soil for seeding of forbes and grasses.

Task 4) Park staff will plant forb and grass seed. This task will be performed over a three year period. Forb seed will be planted first followed by grass seed planting the next year. This task will be performed in the late winter/spring months.\

Prairie grass and forb species will be selected by IDNR district biologists. To date, park staff have restored over 125 acres of land into prairie grasses over the last 7 years. Park staff, along with the guidance of district IDNR biologists, have the knowledge and technical experience to complete tasks 2 and 3 and 4.

Based on the timeline for soil preparation and seeding of the forbs and grasses, the proprosal's objective will require four years to complete. Thus, we are requesting a 1-year extension.

Post-management following seeding is critical for the success of the restoration and will consist of the following techniques: 1) Prescribed burning, along with spot mowing, for the first five years. 2). After five years, areas will be put on a 2 to 3 year prescribed burning rotation, depending upon the condition of the grasslands.

Location:

All work associated with the project will be performed at Eldon Hazlet State Park and South Shore State Park.

Estimated Cost:

Clear 200 acres ($40,000); Labor cost maintaining existing habitat and restoring 200 acres/contract management($80,000); Seed cost ($100,000); Herbicide ($10,000).

Federal $
Contractor to clear 200 acres ($40,000), 70% of seed cost ($70,000), 50% of herbicide ($5,000).
Total Federal $: $115,000.
Match $
Labor cost ($80,000), 30% of seed cost ($30,000), 50% of herbicide ($5,000).
Total Match $: $115,000

Total Project Cost: $230,000.

Personnel:

The following IDNR staff at Eldon Hazlet State Park will be involved in the project:

Gary Tatham, Superintendent
Jim Birdsell, Site Assistant Superintendent
John Bunnell, Natural Resource Coordinator
Gene Alexander, Ranger
Roland Kampwerth, Site Technician
George Litzenburg, Site Technician
Clarence Hilborn, Site Technician
Tony Donnelson, Site Technician
Shelly Seelhoefer, Office Coordinator

Other IDNR staff include:

Diane Tecic
Marty Kemper

Mark Phipps
Mark Koch
Illinois Natural History Survey staff

Other personnel include:
Vandalia Correctional Inmate workcrew

Compliance:

All state, federal and local laws will be complied in association with this project.